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Claims

[c1] 1. A process comprising the steps of:
forming an aluminized surface within an internal cavity of a component by placing within the internal cavity a material comprising metallic particles of an aluminum source, wherein some of the metallic particles oxidize to form adherent particles that are sintered to the aluminized surface; and then
contacting the aluminized surface with an aqueous caustic hydroxide solution until the adherent particles are removed from the surface.

[c2] 2. The process according to claim 1, wherein the solution contains at least 100 grams/liter of potassium hydroxide and the balance essentially de-ionized water.

[c3] 3. The process according to claim 1, wherein the solution contains about 175 to about 225 grams/liter of potassium hydroxide and the balance essentially de-ionized water.

[c4] 4. The process according to claim 1, wherein the solution consists of about 175 to about 225 grams/liter of potassium hydroxide and the balance de-ionized water.

[c5] 5. The process according to claim 1, wherein the aluminizing step comprises a slurry aluminizing process in which the material comprises the metallic particles suspended in a liquid vehicle.

[c6] 6. The process according to claim 1, wherein the adherent particles comprise metallic particles whose outer surfaces are oxidized.

[c7] 7. The process according to claim 1, wherein the forming step results in oxide particles being sintered to the aluminized surface, and the oxide particles are removed from the aluminized surface by the contacting step.

[c8] 8. The process according to claim 1, wherein the contacting step is performed at a temperature of about 66°C to about 88°C.

[c9] 9. The process according to claim 1, wherein the contacting step is performed at atmospheric pressure.

[c10] 10. The process according to claim 1, wherein the contacting step is performed for a duration of at least two hours.

[c11] 11. The process according to claim 1, further comprising the step of agitating the solution while the solution contacts the surface.

[c12] 12. The process according to claim 11, wherein the agitating step is performed with ultrasonic energy at a frequency of about 20 kHz to about 40 kHz and a power level of about 80 to about 450 watts per liter of the solution.

[c13] 13. The process according to claim 11, wherein the agitating step is performed for a duration of at least two hours.

[c14] 14. The process according to claim 1, wherein the component is a gas turbine engine component and the internal cavity is a cooling passage.

[c15] 15. A process comprising the steps of:
forming an aluminized surface within an internal cavity of a gas turbine engine component by injecting a slurry into the internal cavity and then heating the slurry and the component, the slurry comprising metallic particles of an aluminum source, oxide particles, and an activator that are mixed and suspended in a liquid vehicle, the activator vaporizing during heating to react with the metallic particles and form a volatile aluminum halide, wherein some of the metallic particles oxidize to form oxidized particles that sinter to the aluminized surface;
removing the oxidized particles from the aluminized

surface by immersing the aluminized surface in an ultrasonically-agitated solution containing at least 100 grams/liter of potassium hydroxide and the balance essentially de-ionized water; and then
rinsing the internal cavity with water to remove the solution.

[c16] 16. The process according to claim 15, wherein the solution consists of potassium hydroxide and de-ionized water.

[c17] 17. The process according to claim 15, wherein the solution consists of about 175 to about 225 grams/liter of potassium hydroxide and the balance de-ionized water.

[c18] 18. The process according to claim 15, wherein some of the oxide particles sinter to the aluminized surface during the forming step and are subsequently removed from the aluminized surface during the removing step.

[c19] 19. The process according to claim 15, wherein the removing step is performed at a temperature of about 71°C to about 77°C and at atmospheric pressure for a duration of about two to eight hours.

[c20] 20. The process according to claim 15, wherein the component is a turbine blade.